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Alkon/R9/USEPA/US
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cc
bcc Joseph Lapka/R9/USEPA/US@EPA
Subject Cabrillo Port - confirmation/correction of emission
calculations

We at EPA received the following comments that South Coast had regarding the EIR. I expect that BHP's submission of revised ship engine figures will address the second comment, but EPA would appreciate confirmation -- and if necessary correction -- of the emissions figures. Please address these concerns, and include any necessary correction of the emission calculations, in the Errata Sheet submission you are preparing.

The South Coast reviewer's comments:

I also found an error in their emission calculations for the large 8 MW dual-fuel generators (App. G2, Table FSRU 5) on board the FSRU (floating terminal) that result in underestimating all generator emissions by 10% percent. The EPS Method 19 F-factor they used of 8713 (actually should be 8710) dscf/MMBtu of natural gas burned is based on MMBtu of higher heating value (HHV), but I believe the Wartsila specs (7239 Btu/kW-hr and 47.1% eff.) they used to compute the MMBtu/hr consumed are based on lower heating value of natural gas. The stated efficiency and heat rate of the engines is impossible based on HHV (and even questionable high based on LHV), therefore they are probably based on lower heating value, which is customary in the engine industry. Since HHV is about 10% more than LHV for natural gas, the calculated heat input rates, exhaust flowrates and mass emissions will be about 10% higher if the Wartsila specs are converted to HHV.

Also, for the tugs and crew boats they are using EPA emission factors for 4-cycle, lean-burn natural gas engines. But these vessels will be compression-ignition, dual-fuel engines (with diesel pilot fuel) which can have much higher NOx emissions than what was calculated. Since they are dedicated vessels, they should get actual engine specs like they did for the equipment on the FSRU. (BHP told us in the meeting they think they will may get even lower NOx engines (1.3 g/kW-hr or 1.0 g/bhp-hr) from Wartsilla. This is very good, but If so, it should be a committed mitigation measure.)

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